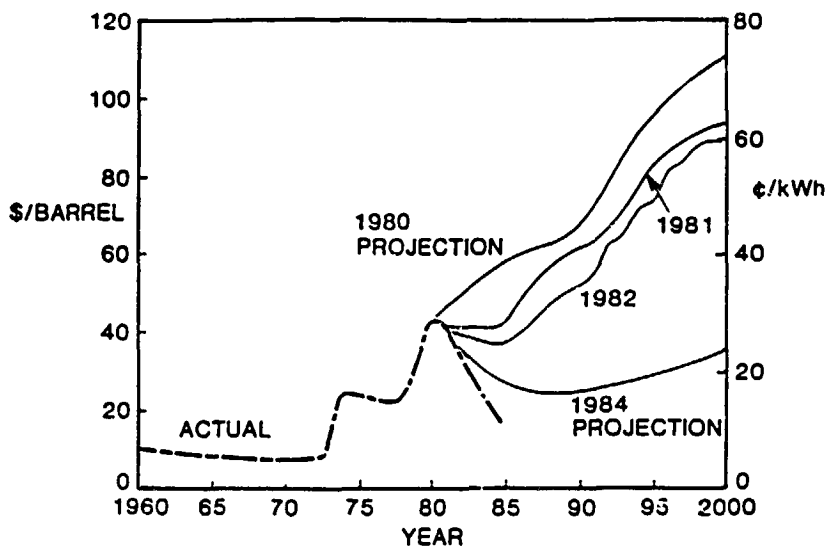


# HISTORICAL OVERVIEW, ACCOMPLISHMENTS, AND VALUE OF THE FSA PROJECT: INDUSTRY

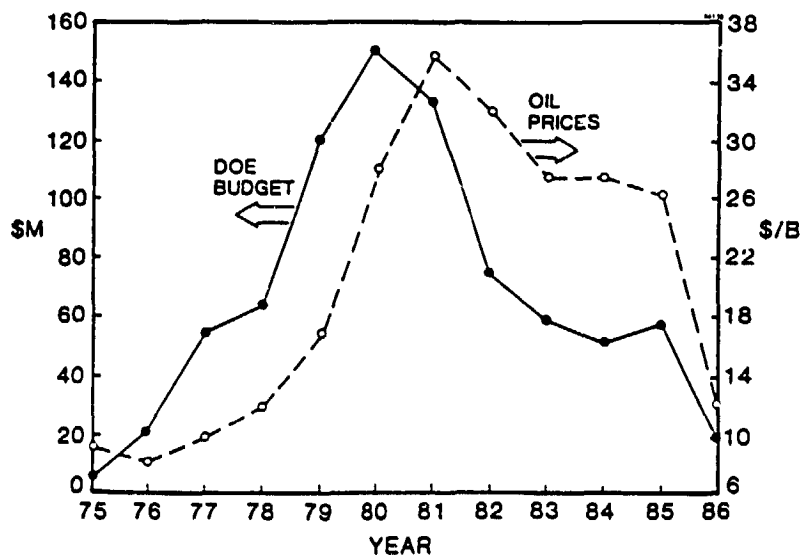
SPIRE CORPORATION

R. Little

## Southern California Edison Data



## DOE PV Budget Per Annum



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## PLENARY SESSIONS

### United States

- ARCO SOLAR 4.9 MW
- SOLAREX 2.2 MW
- SOLAVOLT 0.5 MW
- SOLEC INTERNATIONAL 0.4 MW
- CHRONAR
- SOVONICS
- MOBIL SOLAR
- WESTINGHOUSE
- ENTECH

### Europe

- PHOTOWATT (FRANCE) 1.0 MW
- AEG (WEST GERMANY) 0.8 MW
- PRAGMA (ITALY) 0.5 MW
- BP SOLAR (AUS, SPAIN, G.B.) 0.4 MW
- ANSALDO (ITALY)
- HELIOS (ITALY)
- SIEMENS (FRG)
- ISOFOTON (SPAIN)

### Japan

- SANYO 3.9 MW
- FUJI 2.8 MW
- SHARP 0.5 MW
- KYOCERA
- HOXAN
- KANEKA
- NEC
- HITACHI
- KOMATSU
- MITSUBISHI
- TAIYO YUDEN

## PLENARY SESSIONS

### Developing World

- INDIA
- CHINA
- SAUDI ARABIA
- ALGERIA
- AUSTRALIA
- CANADA
- BRAZIL

### Upside

- DOE
- OTA
- STATE  
PROGRAMS
- UTILITIES
- DOD

### Photovoltaics: More than an Energy Option

- UTILITY GROWTH
- BALANCE OF PAYMENTS
- FOREIGN RELIANCE
- WORLD STANDARD OF LIVING
- MILITARY STRONGER

### PV Progress

- $\eta \sim 15\%$
- ENDURANCE > 20 YEARS
- LOW COST FEASIBLE

## PLENARY SESSIONS

### Utility Interest

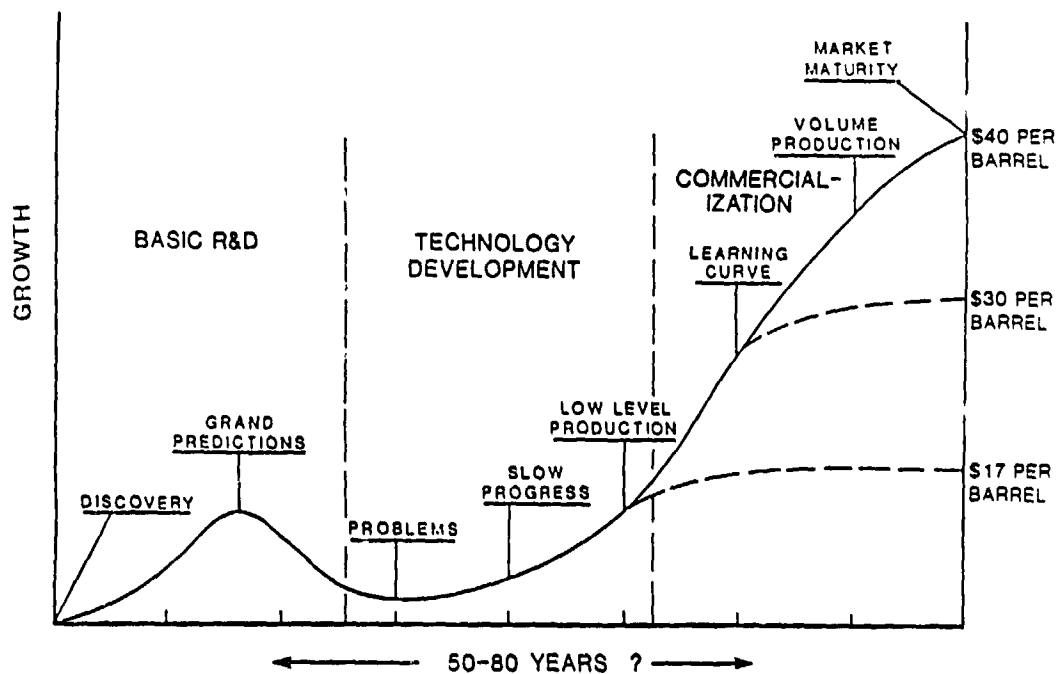
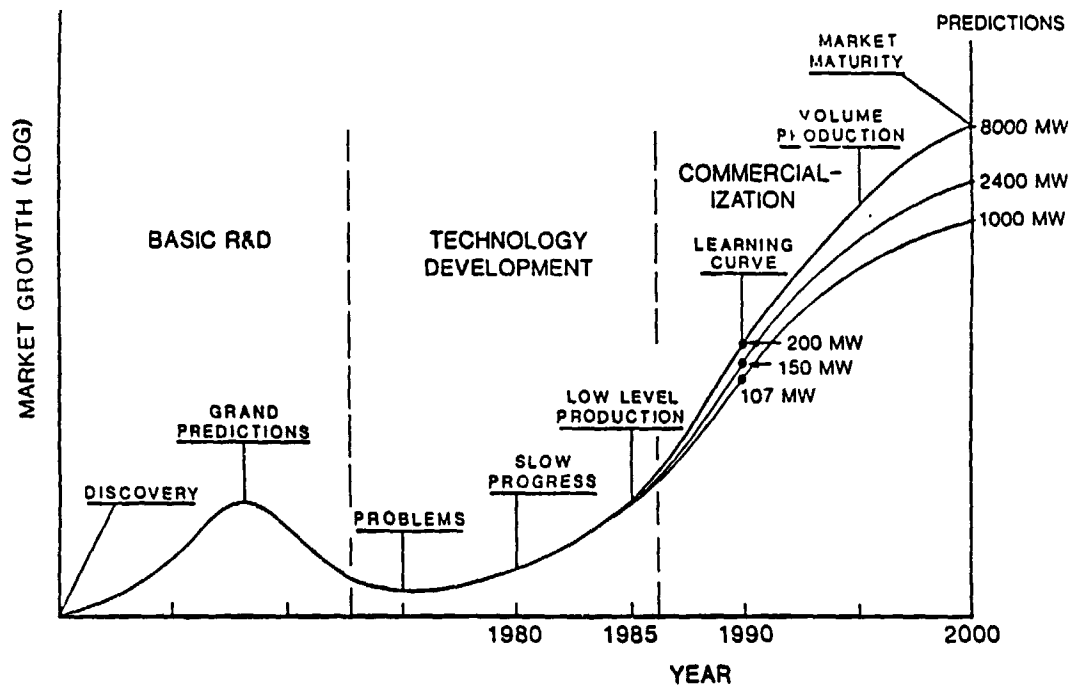
- ALABAMA POWER
- ARIZONA PUBLIC SERVICE CO.
- AUSTIN MUNICIPAL POWER
- BOSTON EDISON
- CON. ED.
- EL PASO ELECTRIC
- EPRI
- FLORIDA P&L
- GEORGIA POWER
- NEW ENGLAND ELECTRIC  
(MASS ELECTRIC)
- NEW YORK POWER AUTHORITY
- PG&E
- SAN DIEGO G&E
- SMUD
- SO. CAL. ED.
- TVA
- VIRGINIA ELECTRIC POWER

### Utility Activities

- |                      |                                |
|----------------------|--------------------------------|
| ● PG&E               | PVUSA                          |
| ● EPRI               | CONCENTRATOR<br>MANUFACTURING  |
|                      | THIN FILM RESEARCH<br>SUPPORT  |
|                      | RIBBON                         |
| ● SO. CAL. ED.       | THIN FILMS                     |
|                      | GaAs                           |
| ● AUSTIN             | 300 kW                         |
| ● ALABAMA            | MANUFACTURE<br>OF $\alpha$ -Si |
| ● NEES               | GARDNER PROJECT                |
| ● VIRGINIA           | TEST PROGRAM                   |
| ● NUMEROUS UTILITIES | INSOLATION MONITORING          |

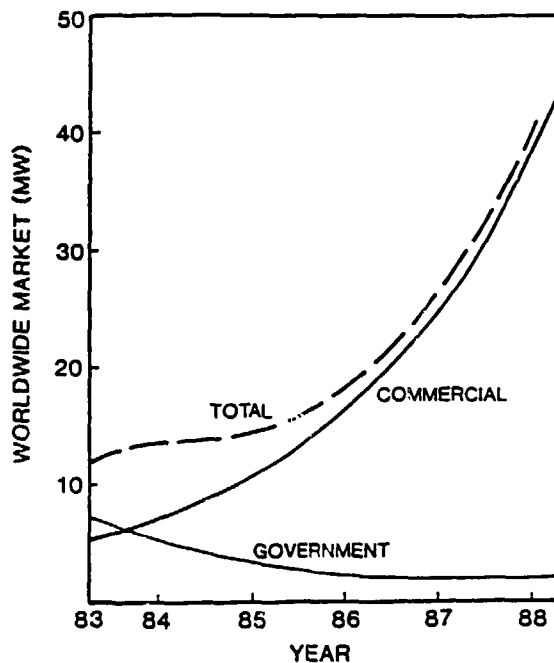
# PLENARY SESSIONS

## PV Technology Commercialization



## FLENARY SESSIONS

### PV Market: Government Versus Commercial



### Massachusetts

- MASS.PV CENTER
  - ASSIST INDUSTRY
  - TRAIN VISITORS
  - INFORMATION DISSEMINATION
- CENTER FOR EXCELLENCE
  - OPERATE NERES
  - DEFINING GOALS NOW
  - REMOTE APPLICATIONS STRESSED
  - INSULATION ISSUES
  - SANDIA ASSISTED
  - FUNDS IN JEOPARDY
- MASS.PUP PROGRAM

## PLENARY SESSIONS

### Massachusetts PUP

- \$1M
- MULTI-AGENCY
- APPLICATIONS
- COST EFFECTIVE
- CENTRALLY FUNDED  
-AGENCY ADMINISTERED

### DOD — Marvroules

- MILITARY MUST BUY IF COMPETITIVE
- REPORT (Draft)
  - 200 SYSTEMS
  - 21,000 POTENTIAL APPLICATIONS
- TRI-SERVICE
  - NAVY LEAD
  - ADVISORY GROUP
- EDUCATION

### DOE Involvement

- R&D PROGRAM
- SUPPORT TO OTHER AGENCIES
- DOD
- CORECT
- MANAGEMENT STRUCTURE  
CONSOLIDATED

## PLENARY SESSIONS

### Office of Technology Assessment

#### PV

- GREATER FLEXIBILITY
  - MODULAR NATURE
  - LOWER INSTALLATION COST
  - SHORTER LEAD-TIMES
- CLEAN AND EFFICIENT
- ABUNDANT SOURCE ENERGY
- MAJOR CONTRIBUTIONS BY YEAR 2000
- DEMONSTRATED FEASIBILITY
- ECONOMIES OF SCALE WILL REDUCE COST

#### NEEDS

- FAVORABLE TAX TREATMENT IMPORTANT
- COOPERATION OF GOVT/IND/UTIL/LABS
- UTILITIES MUST HAVE FULL PURPA BENEFITS

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SOURCE: Office of Science and Technology:  
"New Electric Power Technologies"  
July, 1985 OTA-E-246

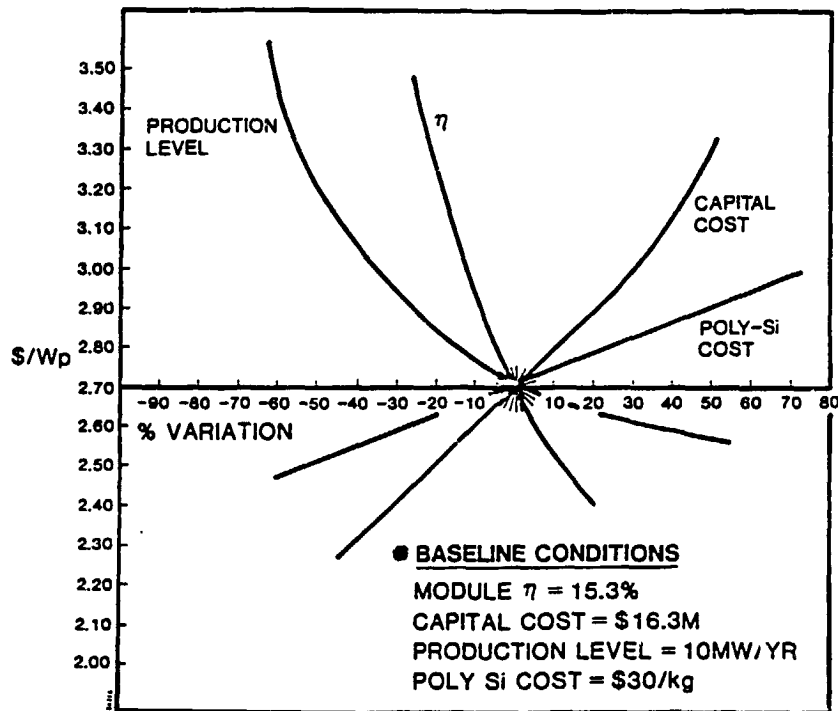
"In a policy reversal, New Hampshire's largest utility says that it will buy electricity from small water, solar, wind and cogeneration power producers as an alternative to reviving plans to complete Unit 2 of the Seabrook nuclear power plant."

The Boston Globe - April 21, 1986



## PLENARY SESSIONS

### Sensitivity Analysis of Module Manufacturing Costs



### Cost of Manufacture: EPRI

#### ● 25 MW LEVEL

- X-Si: \$1.90/Wp
- $\alpha$ -Si MODULES: \$1.15/Wp
- CONCENTRATORS: \$1.40/Wp

ALL TECHNOLOGIES LOOK GOOD  
WITH SCALE UP